Evidence Based Services Committee

Biennial Report

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Summary of Effective Interventions for Youth with Behavioral and Emotional Needs

Despite the diversity of services available to youth with behavioral and emotional needs, there is limited definitive evidence regarding which services work and which do not. This report is an updated review summarizing selected areas of the scientific literature on interventions, services, and medications for youth with significant emotional or behavioral needs. The Child and Adolescent Mental Health Division (CAMHD) of the Hawaii Department of Health Task Force for Empirical Basis to Services issued the original review in August 2000, and its authors disseminated the findings nationally in the journal *Clinical Psychology: Science and Practice* in Spring 2002.

The CAMHD Task Force for Empirical Basis to Services was established in 1999, and in August 2002, the Task Force became a standing committee (Evidence Based Services Committee), reflecting its new structure as a permanent review committee. This committee continues to read, review, and incorporate into policy the various scientific findings related to child emotional and behavioral health.

Services that work:

For attention and hyperactivity problems: Classroom Behavior Management, Parent and Teacher Training
For anxiety, phobias, and avoidance behavior: Cognitive Behavior Therapy (with or without parents), Exposure, Modeling, Educational Support
For autism: Applied Behavior Analysis, Functional Communication Training, Caregiver Education Program
For anorexia: Family Therapy
For bulimia: Cognitive Behavior Therapy
For depression: Cognitive Behavior Therapy (with or without parents), Interpersonal Therapy, Relaxation
For oppositional behavior, conduct problems and delinquency: Parent Training, Multisystemic Therapy, Parent Child Interaction Therapy, Anger Coping Therapy; Assertiveness Training; Problem Solving Skills Training, Rational Emotive Therapy,
For substance use: Cognitive Behavior Therapy, Behavior Therapy, Family Therapy

Medications that work:

For attention and hyperactivity problems: Stimulants, tricyclic antidepressants
For obsessive compulsive disorder: Selective serotonin reuptake inhibitors
For depression: Selective serotonin reuptake inhibitors
For Tourette's disorder: Central adrenergic agonists, antipsychotics
For bipolar disorder: lithium

Committee membership is an open process, by which a member petitions in writing to join. Continual membership requires regular attendance (no more than two consecutive absences) and participation in the reading and coding activities conducted for the purposes of summarizing findings. Members have included parents, providers, educators, university faculty, and health administrators, with backgrounds in nursing, social work, psychology, psychiatry, and special education.

The overarching goals continue to be to broaden and update the summary of scientific information used to guide decisions about children's care. The information presented in this report falls into three major sections. The first section includes a composite of the major randomized, controlled research findings, with attention to promising outcomes, provider type, intervention setting, nature of the children, and a host of other factors. The second section is a summary of the evidence on medication efficacy and safety, based on published reviews and supplemental reports. The third section represents consensus summaries specific to nominated topics regarding practice policy for which limited or no controlled research was available. Each section provides detail about the methods for the review process, and the sections

are presented in decreasing order of methodological and scientific rigor.

Section I: Randomized and Controlled Intervention Research

Methods

The methods for Section I originate from the multiple efforts conducted within the American Psychological Association (APA). These include the collective reports of APA Task Force on Psychological Intervention Guidelines, the APA Task Force on Promotion and Dissemination of Psychological Procedures, and the APA Task Force on Empirically Supported Psychosocial Interventions for Children.

Because the work of the EBS Committee involves the specific goal of improving practice on a large scale, it has been the consensus of the Committee that simply distributing existing lists of efficacious interventions would be insufficient to ensure that quality interventions would ultimately be delivered to children. Because such factors as the robustness of interventions in rural settings, the appropriateness of particular interventions with various cultural groups in various settings, and the difficulty of training therapists are of primary concern to providers and families, these concerns have been a primary focus of the Committee in its review.

The research literatures reviewed in this section were primarily organized around particular problem behaviors, rather than strictly by psychiatric diagnosis. For example, many studies of depression used ratings of low mood rather than diagnosis as a means for including participants. In some instances, the literature was not organized around problem areas at all, but rather focused on interventions or settings. For example, some studies looked at the practice of case management, the effects of hospitalization, or the benefits of therapeutic foster care.

As the diversity of topics has grown, numerous subcommittees have been established to review specific areas of the literature. These include:

- Anxious or avoidant behavior problems
- Depression or withdrawn behavior problems
- Disruptive behavior and willful misconduct problems
- Substance use
- Attention and hyperactivity behavior problems
- Bipolar disorder
- Schizophrenia
- Autism
- School based programs
- Services interventions

Reviews in each of these areas have been in progress since 2000, and each subcommittee is staffed by a minimum of four readers.

Any member of the EBS committee can nominate a topic for review. The committee at large decides the order of topics to be reviewed. To select articles that meet criteria for review by the committee, a single staff member conducts a broad review of the literature. Reference lists of all articles that are not forwarded to the committee for review on each topic area are housed at the CAMHD. The committee chairperson reviews the selected articles and approves their distribution to the appropriate subcommittee. Subcommittee members read the articles and summarize and present their findings to the committee at large. Articles that are reviewed unfavorably by the committee or deemed unsuitable because of flawed research methods are stored at the CAMHD and excluded from further review.

Services for the EBS Committee review were identified through: (a) computerized searches of the PSYCINFO database dating back to 1980; (b) evaluation of studies reviewed by the APA Task Force on Empirically Supported Psychosocial Interventions for Children, the American Academy of Child and Adolescent Psychiatry Practice Parameters, and other major published scientific literature reviews; (c) personal communication with national scholars in effectiveness research and (d) additional nominations from EBS Committee members. Over 26,000 articles were screened, with over 230 read in full detail over a period of 4 years.

Using the methodology adapted from the APA Task Force on Psychological Intervention Guidelines, all services were evaluated with respect to efficacy and effectiveness. The APA's Task Force on Promotion and Dissemination of Psychological Procedures defined two different levels at which an intervention may be deemed efficacious (see the first two levels in Table 1). At the highest level, a "Well-Established" intervention refers to an intervention that has demonstrated efficacy either (a) in a minimum of two good between group design experiments, where the intervention is superior to pill or psychological placebo or to another intervention, or (b) in a large series of controlled single-case experiments ($n \geq 9$) that have compared the intervention to another intervention. In either case, interventions must be conducted with a manual, and effects must have been demonstrated by at least two different investigators. At the

Table 1. Definition of Evidence Based Services

Level 1: Best Support

I. At least two good between group design experiments demonstrating efficacy in one or more of the following ways:
   a. Superior to pill placebo, psychological placebo, or another treatment.
   b. Equivalent to an already established treatment in experiments with adequate statistical power (about 30 per group; cf. Kazdin & Bass, 1989).

OR

II. A large series of single case design experiments ($n \geq 9$) demonstrating efficacy. These experiments must have:
   a. Used good experimental designs
   b. Compared the intervention to another treatment as in I.a.

AND

Further criteria for both I and II:

III. Experiments must be conducted with treatment manuals.
IV. Characteristics of the client samples must be clearly specified.
V. Effects must have been demonstrated by at least two different investigators or teams of investigators.

Level 2: Good Support

I. Two experiments showing the treatment is (statistically significantly) superior to a waiting-list control group. *Manuals, specification of sample, and independent investigators are not required.*

OR

II. One between group design experiment with clear specification of group, use of manuals, and demonstrating efficacy by either:
   a. Superior to pill placebo, psychological placebo, or another treatment.
   b. Equivalent to an already established treatment in experiments with adequate statistical power (about 30 per group; cf. Kazdin & Bass, 1989).

OR

III. A small series of single case design experiments ($n \geq 3$) with clear specification of group, use of manuals, good experimental designs, and compared the intervention to pill or psychological placebo or to another treatment.

Level 3: Moderate Support

I. One between group design experiment with clear specification of group and treatment approach and demonstrating efficacy by either:
   a. Superior to pill placebo, psychological placebo, or another treatment.
   b. Equivalent to an already established treatment in experiments with adequate statistical power (about 30 per group; cf. Kazdin & Bass, 1989).

OR

II. A small series of single case design experiments ($n \geq 3$) with clear specification of group and treatment approach, good experimental designs, at least 2 different investigators or teams, and comparison of the intervention to pill, psychological placebo, or another treatment.

Level 4: Minimal Support

I. Treatment does not meet criteria for Level 1, 2, 3, or 5.

Level 5: Known Risks

I. At least one study or review demonstrating harmful effects of a treatment that would otherwise meet criteria for Level 4.

second level, the status of "Probably Efficacious" refers to an intervention that has been found to be either: (a) superior to a wait-list control group in two experiments, (b) equivalent to an already established intervention or superior to pill placebo, psychological placebo, or another intervention in a single experiment, or (c) superior to pill placebo, psychological placebo, or another intervention in a small series of single case design experiments ($n \geq 3$).

We noted that for some areas, it was not possible to identify interventions that met criteria for Well-Established (Level 1) or Probably Efficacious (Level 2) status. This led to the decision of the committee to expand the efficacy criteria in such cases to include a wider range of interventions for considered. The final expanded criteria were adapted from the definitions of the APA Task Force, and consisted of 5 levels (see Table 1). Of primary interest was the renaming of all levels, and the addition of a third level, which corresponded to "Moderate Support" interventions. According to our definitions, to be classified as having "moderate support," an intervention was required to demonstrate efficacy either (a) in one between group design experiment in which the intervention is superior to pill or psychological placebo or to another intervention, or (b) in a small series of controlled single-case design experiments ($n \geq 3$) with clear specification of group and intervention, at least 2 investigators or teams, and comparison of the intervention to pill, psychological placebo, or another intervention.

As noted above, this group also examined effectiveness of interventions by reviewing selected aspects of the studies. Effectiveness variables were defined by this group in a manner consistent with that of the original APA Task Force. The lists of variables coded for each study and the corresponding definitions appear in Table 2.

Interventions were not defined at the level of specific manuals. Rather, interventions sharing a majority of components with similar clinical strategies and theoretical underpinnings were considered the "same intervention" for the purposes of evaluation. This decision to collapse to a lower level of detail was designed to avoid difficulties with finding multiple interventions with only partial support, and little means to select among those interventions for implementation. For example, different interventions for depressive or avoidant behaviors that involved

self-monitoring, identifying problem thoughts, developing coping thoughts or problem-solving strategies, and accompanying behavioral exercises were collectively labeled "cognitive behavior therapy" (CBT) and evaluated as a single approach. When differences were more substantial (e.g., one intervention outperformed another in a study), interventions were considered distinct.

Cautionary Statement

As mentioned in the first report, it is important to keep in mind a number of factors when considering the results of these reviews. First, any summary of scientific support for interventions is a work in progress, in that findings are continually accumulating as new interventions are developed and tested. Thus, the reviews are meant to represent the state-of-the-art at the time that the committee met and cannot address quality of interventions that may still be on the horizon. Second, the group at no point entertained the idea that the results would provide a panacea or produce lists of perfect interventions. Rather, the goals of the group were (a) to rank interventions in order of their relative likelihood be helpful and (b) to provide detailed information about the studies in which these interventions have been found to work. Finally, although there is a proliferation of other reviews recommending best practices in the literature, such reviews are often consensus-based, meaning that interventions are selected by a panel of experts. Our approach differs in that it measures each intervention against pre-defined scientific criteria. Our criterion-based approach is thus designed to yield a much more conservative and reliable determination of best practices, and consequently may be inconsistent with consensus-based recommendations found elsewhere.

Results

Anxious or Avoidant Behavior Problems

Interventions identified. The interventions reviewed for anxious or avoidant behavior problems included all those with controlled outcome research as identified through the search procedures outlined above. These interventions were: (a) CBT, (b) CBT with Parents Included, (c) CBT plus CBT for Parent's Anxiety, (d) Educational Support, (e) Eye Movement Desensitization and Reprocessing (EMDR), (f) Exposure (g) Modeling, (h) Play Therapy, and (g) Supportive Therapy. The collective results for anxious or avoidant behavior problems are summarized in Table 3.

"…CBT, exposure, and modeling were the interventions of choice, and the question of whether and when to include parents … awaits some additional research."

Efficacy. Of the interventions identified, three were supported at Level 1: CBT, exposure, and modeling. CBT was found to be superior to a waitlist or no treatment control condition in 7 studies. In two studies, CBT was found to be superior to two other interventions: Imagery and supportive therapy. Exposure was better than no-treatment or waitlist in 12 studies, and was superior to other interventions (coping strategies, modeling, play therapy, EMDR, and imagery) in 5 studies. Modeling was found to be better than no interventions in 4 studies, and superior to observation of the feared object in one study. Modeling was also found to be equivalent to an already established intervention, exposure, in one study.

Two variations of CBT were supported at Level 2. CBT with parents included proved better than a waitlist condition in 3 studies, and in one of those studies was found to be superior to CBT. One study found that CBT plus CBT for parent anxious behavior problems was equivalent to CBT alone, and although preliminary, the details of the study suggested that CBT plus CBT for parent's anxious behavior problems might be superior to CBT alone in situations involving a parent with an anxiety problem. Finally, educational support was found to be as good as CBT to intervene in anxiety-based school refusal in a single study.

The evidence did not establish the efficacy of EMDR, play therapy, and supportive therapy for anxious or avoidant behavior problems. Of the available services reviewed, CBT, exposure, and modeling were the interventions of choice, and the question of whether and when to include parents in that intervention awaits some additional research.

Effectiveness. The parameters of effectiveness for anxious or avoidant behavior problems interventions are summarized in Table 3. All of the supported interventions have been used successfully with boys and girls, are relatively short term, were delivered by therapists ranging from undergraduate level to doctoral level, and showed rather large effects. Of the Level 1 interventions, CBT and exposure consistently showed the largest effects. Effect size estimates for exposure suggested that the average child at post- test scored better than 98% of children's pre-treatment scores. For CBT, that figure was 85%, and for modeling it was 71%. The higher effects for exposure may be due to the fact that most studies of exposure (and modeling) involved less complicated anxious or avoidant behavior problems. Studies that specified ethnicity mostly involved Caucasian or

Table 2. Codes for Evaluating Effectiveness

Feasibility	
Compliance	Equal to the percentage of children who did not drop out (post treatment *n*)/(pre treatment *n)* within that treatment condition. For example, if 6 of 30 children drop out during treatment, compliance = 80%.
Trainability	"High" = manual available AND treatment was successfully used by non-doctoral level practitioners; "Moderate" = manual available OR treatment was successfully used by non-doctoral level practitioners; "Low" = no manual available AND treatment was successfully used by doctoral level practitioners only.
Generalizability	
Gender	The percentage of boys or girls within each condition; if information was not reported for a specific treatment condition, this number was estimated using information for the entire study; also, when the lower percentage was greater than 30%, the term "both" was used.
Age	Years or months since birth; when range was not reported, it was estimated by using the mean age plus or minus 1.5 *SD* (approximately 87% of a normal distribution); thus, for a mean age 9.0 and SD = 1.6, the estimated range would be 6 to 11; if information was not reported for a specific treatment condition, this number was estimated using information for the entire study.
Ethnicity	Percentage of each ethnic group within condition; if information was not reported for a specific treatment condition, this number was estimated using information for the entire study under the assumption of the independence of ethnicity and treatment condition.
Therapist	The training/profession, if known, for the main provider(s) involved within each treatment condition; doctoral graduate students were classified as Master's level.
Frequency	Frequency of contact with child/family, reported either in sessions per unit time (e.g., "weekly") or in total hours per unit time (e.g., "5 hours/day").
Duration	The length of time from pre treatment to post treatment assessment.
Format	Whether the treatment was group therapy or individual therapy and whether it included parents or family.
Setting	The primary type of location in which treatment was delivered; when setting was not reported, it was sometimes inferred based on aspects of the treatment (e.g., teacher as therapist implied a school setting)
Robustness	"High" = more than one investigator team AND more than one protocol showing positive outcome AND no specialized setting required; "Moderate" = no specialized setting required AND one of the following: (a) more than one investigator team OR (b) more than one protocol showing positive outcome OR (c) more than 3 positive demonstrations; "Low" = specialized setting required OR all of the following: (a) single investigator AND (b) single protocol AND (c) 3 or fewer positive demonstrations.
Cost and Benefit	
Cost	Estimated from consideration of both the therapist training and the total number of contacts using the following strategy:

Cost / *Provider/setting*	*Teacher or Parent*	*Bachelor's*	*Master's*	*Doctoral*	*Inpatient or residential*
	Any	*< 120*	*< 40*	*<20*	
Moderate/low		*121 to 240*	*41 to 80*	*21 to 40*	*< 4 days*
Moderate		*241 to 500*	*> 80*	*41 to 80*	*4 to 7 days*
Moderate/high		*> 500*		*> 80*	*8 to 15 days*
High					*> 15 days*

Effect size	Calculated as the number of standard deviations that each group improved from pre treatment to post treatment on a measure selected by clinical consensus, with highest consideration given to use the most commonly and most sensitive measures for that area of the research literature

African American children, and one small study of exposure involved Japanese children. CBT was supported in children from 2 to 17; Exposure was supported in children 3 to 17; and Modeling was supported in children from 3 to 13. CBT with parents included and CBT plus CBT for parent anxious behavior problems were supported in children from 7 to 14; Educational Support was supported in children 6 to 17. In general, exposure and modeling appear to be briefer than CBT, and were most successfully applied with children having specific phobias (e.g., animals, swimming). CBT and it variants appeared to be more appropriate for the more complex anxious or avoidant behavioral problems (e.g., social phobia, separation anxiety disorder, generalized anxiety disorder, post-traumatic stress disorder, etc.).

Attention and Hyperactivity Behavior Problems (including Attention Deficit Hyperactivity Disorder; ADHD)

Interventions identified. The interventions reviewed for Attention and hyperactivity behavior problems included all those with controlled outcome research as identified through the search procedures outlined above, with the exception of some older multiple baseline studies that did not provide incremental information regarding efficacy. The specific interventions were: (a) Parent Training in behavioral management, (b) Classroom Behavior Management, (c) Social Skills Training, (d), "Parents are Teachers" program, (e) Parent Effectiveness Training, and (f) Self-Control Training. Parent Training and Classroom Behavior Management are highly similar interventions in terms of content and techniques, differing mainly in the setting in which they

Table 3. Effective Interventions for Anxious and Avoidant Behavior Problems

Intervention	Train	Compliance	Gender	Age	Ethnicity	Therapist	Frequency	Duration	Format	Setting	Robustness	Cost	Effect Size
Level 1													
CBT	High	89%	Both	2 to 17	54% Not Specified;33 % Caucasian; 7% Armenian; % African American	Undergrad; MA; PhD	Weekly	3 to 16 weeks	Group; Individual	Clinic; School	High	Low	1.05[a]
Exposure	High	*	Both	3 to 17	69% Not specified; 15% Caucasian; 8% Japanese; 8% African American	Undergrad; BA; MA; PhD	Daily; Weekly	1 day to 12 weeks	Group; Individual	Clinic; School	High	Low	2.02[a,b]
Modeling	*	*	Both	3 to 13	65% Not specified; 23% Caucasian; 11% African American	Not Specified	2/day; Daily; Weekly	1 day to 8 weeks	Group; Individual	Clinic	High	Low	0.55[b]
Level 2													
CBT with Parents Included	High	93%	Both	14 to 18	Not Specified	MA; PhD	Weekly	12 weeks	Group; Individual	Clinic	Low	Low	1.68[a,b]
CBT plus CBT for Parents	High	91%	Both	7 to 14	Not Specified	Not Specified	Weekly	12 weeks	Group	Clinic	Low	Low	0.47[a]
Educational Support	High	*	Both	6 to 17	92% Caucasian	Not Specified	Weekly	12 weeks	Individual	Clinic	Low	Low	N/A

Note. CBT = Cognitive Behavior Therapy; "Train" = Trainability; "N/A" = not reported; Effect sizes reported are the median effect size across all relevant studies (a = Revised Children's Manifest Anxiety Scale; Reynolds & Richmond, 1978; b = Child Behavior Checklist, Internalizing Scale; Achenbach, 1991). * Could not be determined due to lack of information in published reports.

were used (in clinic with parents versus in school with teachers). Thus, these interventions were collectively referred to as Behavior Therapy or Management, and information about the different settings in which it was tested is provided under the description of setting.

"According to the research, Behavior Therapy and Management, both in the classroom and at home, were the best-supported non-drug treatments."

Efficacy. Of the interventions identified, only a single psychosocial intervention was supported by research. Behavior Therapy/Management was supported at Level 1 (see Table 4). Behavior Therapy/Management was found to be superior to pill placebo in a single study, and was found superior to no treatment control conditions in 6 studies.

The evidence did not establish the efficacy of Social Skills Training, "Parents are Teachers," Parent Effectiveness Training, or Self-Control Training. According to the research, Behavior Therapy and Management, both in the classroom and at home, were the best-supported non-drug treatments. Although pharmacological treatments were not specifically reviewed for this report, it should be known that the collective research evidence has shown that (a) stimulant medication is superior to Behavior Therapy/Management alone, (b) stimulant medication and Behavior Therapy/Management combined are superior to Behavior Therapy/Management alone, (c) stimulant medication and Behavior Therapy/Management combined are not superior to medication alone, and (d) Behavior Therapy/Management and low dose medication may be similar to high dose medication alone.

Effectiveness. The parameters of effectiveness for Behavior Therapy/Management for Attention Deficit and Hyperactivity behavioral problems appear in Table 4. Behavior Therapy/Management has been tested mainly with boys, is relatively short term, was delivered by therapists ranging from teachers and teacher's aides to doctoral level therapists, and showed large effects in those studies reporting degree of change. Effect size estimates from two studies suggested that the average child at post- test scored better than 89% of children's pre-treatment scores. Classroom Behavior Management tended to be more frequent and shorter term within the studies reviewed (e.g., daily implementation of a classroom time out or reward program), as opposed to Parent Training in behavioral interventions, which generally involved a therapist meeting weekly with parents to review similar behavior management strategies for the home. Although the follow up evidence was not reviewed, it appears that behavior management programs for Attention Deficit and Hyperactivity behavior problems may need to be ongoing. For example, one study showed that when a classroom behavior program was withdrawn, children's problems returned. There is essentially no information about differences among ADHD subtypes (i.e., inattentive, hyperactive, combined) in terms of response to Behavior Therapy/Management.

Autism

Evaluation of the autism intervention literature was divided into two main areas delineated by Rogers (1998): (a) *comprehensive interventions*, which referred to interventions designed to improve overall functioning, address multiple symptoms, and exist over the long term, and (b) *focal interventions*, which were designed more to eliminate problematic or undesired behaviors associated with autism (e.g., self-injurious behavior, tantruming, self-stimulation). Although a great number of interventions have been proposed for autistic disorder, we only considered studies that included a pill or placebo control, an alternative condition, or a wait-list control. This requirement reduced the number of intervention for review to 6 areas: (a) Auditory Integration Training, (b) Discrete Trial Training, (c) Functional Communication Training (FCT), (d) Applied Behavior Analysis (ABA), (e) Playschool Program, (f) Psychoeducational Program, and (g) the TEAACH Program.

Efficacy. No comprehensive interventions were found to have support for their efficacy as defined by our criteria. This somewhat discouraging conclusion is consistent with recent independent reviews, and speaks to the need for additional research at the national level for interventions for autism. Although there is frequent observance of clinical improvements in much of the research on comprehensive treatments for autism, essentially all of this research has failed to rule out alternative explanations for improvement, which is a necessary component for scientific research. Thus, it cannot be said with confidence whether the improvements noted in young children with autism were due to an intervention or simply to group selection procedures, maturation, misdiagnosis, or some other non-therapy factor.

Nevertheless, there was support identified for some focal interventions, that is, interventions whose goals were not to eliminate autism but rather to change specific or provide new skills to the child or family. FCT and ABA

Table 4. Effective Interventions for Attention and Hyperactivity Behavior Problems (including ADHD)

Intervention	Train	Compliance	Gender	Age	Ethnicity	Therapist	Frequency	Duration	Format	Setting	Robustness	Cost	Effect Size
Level 1													
Behavior Therapy	High	89%	81.5% male	6 to 12	Not Specified*	teacher; teacher's aide; MA; PhD	daily to weekly	1 to 12 weeks	Group; Individual	Clinic; School	High	Low	1.24[a,b]

Note. "Train" = Trainability; "N/A" = not reported; Effect sizes reported are the median effect size across all relevant studies (a = ADHD Rating Scale; DuPaul, 1991; b = Conners Teacher Rating Scale-Hyperactivity; Conners, 1990). * A single study described its sample as "predominantly Caucasian."

Table 5. Effective Interventions for Autism

Intervention	Train	Compliance	Gender	Age	Ethnicity	Therapist	Frequency	Duration	Format	Setting	Robustness	Cost	Effect Size
Level 3													
FCT and ABA	Mod	100%	Both	2 to 15	95% Not Specified; 5% African American	Parent; Teacher; BA; MA	5/day to 2/week	2 weeks to 11 months	Individual	School	High	Low	N/A
Caregiver Based Intervention Program	High	100%	94% male	2 to 6	Not Specified	BA	Weekly	12 weeks	Group	Day Care	Low	Low	0.81[a]

Note. ABA = Applied Behavior Analysis; FCT = Functional Communication Training; "Mod" = Moderate; "Train" = Trainability; Effect sizes reported are the median effect size across all relevant studies (a = TRE-ADD Autism Quiz; Factor, Perry, Freeman, & Darjes, 1987). No treatments were supported at Level 1 or Level 2. ABA/FCT and Caregiver Based Intervention Program were supported only as "focal" treatments, meaning they only addressed certain aspects of child or family functioning and made no claims about eliminating the presence of autism.

were supported at Level 3, with over 15 demonstrations of controlled single subject experimental designs. FCT is based upon the principle of providing children who have limited or no communication skills with a means to communicate requests in order to avoid engaging in negative behaviors. Using similar strategies of examining and changing behavior, ABA involves developing new skills or eliminating unwanted behaviors (e.g., self-harm). The research often showed that intervention effects were due to a specific and individualized aspect of the intervention, and was not simply the result of therapist contact or attention. The Psychoeducation Program was supported at Level 3 based on a single study that found it to be superior to day care only in terms of its ability to inform, educate, and support parents of children with autism.

"FCT and ABA were supported at Level 3, with over 15 demonstrations of controlled single subject experimental designs."

Effectiveness. FCT and ABA were used with boys and girls from ages 2 to 15, and often involved parents and teachers delivering specific components of the intervention. More than any other interventions reviewed in any area, both FCT and ABA demonstrated appropriateness for school-based implementation, given the multiple demonstrations that teachers were successful at managing the programs under the guidance of the therapist. Frequency of intervention was high, and results for many cases were achieved rather quickly, some as quickly as 2 weeks. Sessions were sometimes multiple times a day in 5 to 10 minute blocks. Although effect size information could not be calculated due to the individualized nature of the designs, it should be noted that FCT and ABA were associated with some important changes in behavior, such as the termination of self-injury.

The Psychoeducation program was a weekly parent group lasting 12 weeks for parents of children aged 2 to 6. Compliance was high, and the effect on parents' reported level of distress and their knowledge about autism was moderate. The effect size indicated that the average parent at the end scored better than 79% of the pre-test scores.

Depression or Withdrawn Behavior Problems

Intervention identified. The interventions reviewed for depressive or withdrawn behavior problems included all those with controlled outcome research as identified through the search procedures outlined above. These interventions were: (a) Behavioral Problem Solving, (b) Cognitive Behavior Therapy (CBT), (c) CBT with Parents Included, (d) Family Therapy, (e) Interpersonal Therapy (IPT), (f) Relaxation, (g) Self-Control Training, (h) Self-Modeling, and (i) Non-directive Supportive Therapy.

Efficacy. Of these, CBT was the only intervention supported at Level 1. CBT was found to be superior to a waitlist or no treatment control condition in 6 well-designed studies. In two studies, CBT was found to be superior to four other interventions: Family Therapy, Relaxation, Self-Modeling, and Supportive Therapy. CBT with Parents Included was supported at Level 2, having been found better than a waitlist condition in 2 studies, and in one of those studies having also been found equivalent to CBT. IPT was supported at Level 2, performing better than waitlist in two studies and as well as CBT in one of those. Also at Level 2 was Relaxation, which was superior to a waitlist condition in 2 studies. Evidence did not support Family Therapy, Self-Control Training, Self-Modeling, Supportive Therapy, or Behavioral Problem Solving. Of the available services reviewed, CBT appears to be the intervention of choice, and the question of whether to include parents in that intervention awaits further research. IPT appears to be a reasonable alternative to CBT, particularly given that it uses a rather different approach. Finally, although there was some support for Relaxation, the evidence is convincing that Relaxation alone is inferior to CBT.

"Of the available services reviewed, CBT appeared to be the intervention of choice… IPT appeared to be a reasonable alternative to CBT…"

Effectiveness. The parameters of effectiveness for depressive or withdrawn interventions are summarized in Table 2. All of the supported interventions have been used successfully with boys and girls, are relatively short term, were delivered by therapists at the Master's level or above, and showed rather large effects. CBT consistently showed the largest effects of the supported interventions, with the average child at post- test scoring better than 96% of children's pre-treatment scores. In most cases, ethnicity of participants was not specified; however, one study with an entirely Puerto Rican sample supported both IPT and CBT, another study with 39% non-Caucasian participants (mostly African American) supported CBT, and a study with a 79% Hispanic American sample supported IPT. CBT was supported in children from 9 to 18; IPT was supported in children from 12 to 18; CBT with Parents Included was supported in children from 14 to

Table 6. Effective Interventions for Depression and Withdrawn Behavior Problems

Intervention	Train	Compliance	Gender	Age	Ethnicity	Therapist	Frequency	Duration	Format	Setting	Robustness	Cost	Effect Size
Level 1													
CBT	High	94%	Both	9 to 18	84% Not Specified; 13% Puerto Rican; 3% African American	MA; PhD	Weekly or Twice per week	5 to 16 weeks	Individual or group	Clinic; School	High	Low	1.74[a]
Level 2													
CBT with Parents Included	High	88%	Both	14 to 18	Not Specified	MA; PhD	Twice per week	7 to 8 weeks	Group	Clinic	Low	Low	1.40[b]
IPT	High	85%	Both	12 to 18	49% Puerto Rican; 41% Hispanic; 10% Caucasian	MA; PhD; MD	Weekly	12 weeks	Individual	Clinic	High	Low	1.51[a,b]
Relaxation	High	100%	Both	11 to 18	Not Specified	MA; PhD	Twice per week	5 to 8 weeks	Group	School	Low	Low	1.48[a,b]

Note. CBT = Cognitive Behavior Therapy; IPT = Interpersonal Therapy; "Train" = Trainability; Effect sizes reported are the median effect size across all relevant studies (a = Children's Depression Inventory; Kovacs, 1981; b = Beck Depression Inventory; Beck & Steer, 1987).

18; and Relaxation was supported in children from 11 to 18.

Disruptive Behavior and Willful Misconduct Problems (Including Oppositional Defiant Disorder and Conduct Disorder)

All interventions with controlled outcome research for disruptive and willful misconduct behavioral problems were reviewed and included: (a) Anger Control Training, (b) Anger Coping, (c) Client-Centered Therapy; (d) Communication Skills, (e) Goal Setting, (f) Group Discussion, (g) Group Discussion of Parent Training in behavior management, (h) Group Discussion of Videotape Modeling, (i) Parent Training with Child, (j) Parent Training in behavior management without Child, (k) Parent Training in behavior management with 2 Parents, (l) Human Relations Therapy, (m) Juvenile Justice System, (n) Multisystemic Therapy, (o) Parent Child Interaction Therapy (PCIT), (p) Problem Solving Skills Training, (q) Rational Emotive Therapy, (r) Relationship Therapy, (s) Relaxation, (t) Stress Inoculation, and (u) Supportive Attention. Two important issues were noted in this area: First, a large number of these interventions involve different formats for delivering highly similar information and strategies. In particular, Parent Training in behavior management and its variants (e.g., time out, reward contracts, giving commands) are represented by a large number of interventions above. The formats involved videotaped instruction, parent group discussion, parent training in behavior management alone, and parent training in behavior management with the child present. Because the research findings did not differ appreciably depending on the format, these interventions were collapsed to simplify their evaluation, broadly represented as Parent Training in behavior management. Similarly, Anger Control Training and Anger Coping were collapsed to be considered as variants of a single intervention approach ("Anger Coping Therapy"). The variety of formats with which these techniques have been found successful speaks to the robustness of Parent Training in behavior management as an intervention. Second, the population of children represented by "Conduct and Oppositional Disorders" varies considerably, from misbehaving youngsters to delinquent adolescents. Thus, developmental considerations and child characteristics are of particularly great importance when selecting interventions. In other words, it should not be assumed that a Level 1 intervention is the best choice for all children with disruptive or willful misconduct behavioral problems, unless the effectiveness parameters (most notably, age) also suggest a high probability of success.

"…Parent Training in behavior management has the clearest support for its efficacy, having been evaluated in nearly 20 studies …"

Efficacy. Parent Training in behavior management in its various forms was the only intervention supported at Level 1. It was found to be superior to alternative interventions (including Client-Centered Therapy, Family Therapy, Relationship Therapy, and Supportive Attention), in 6 well-designed studies, and superior to waitlist in 9 studies. Several manuals are available, and formats range from videotape modeling of parenting skills to individual therapy with parents. Several interventions were supported at Level 2. Anger Coping Therapy was better than Goal Setting in a single study and was better than no treatment in 3 studies. Assertiveness Training was better than group discussion in a single study. Multisystemic Therapy (MST) was found superior to individual therapy in a single study and superior to the Juvenile Justice System in 2 additional studies. Problem Solving Skills Training was found to be superior to relational therapy and supportive attention in 4 studies, and was better than parent training in behavior management in a single study. Finally, a single study of Rational Emotive Therapy (RET) found it to be superior to human relations therapy. Of all of these interventions, Parent Training in behavior management has the clearest support for its efficacy, having been evaluated in nearly 20 studies in its various forms.

"…the support for the effectiveness of Multisystemic Therapy is excellent, given that it has been tested with some of the most challenging youth … and has demonstrated superiority to realistic and commonly employed alternative interventions."

Effectiveness. Parent Training in behavior management was primarily used with younger, mostly male children (90% of studies did not treat children over 12). Parent Training in behavior management appears to be highly versatile, low cost, and relatively rapid (most studies documented improvements within 3 months). Its effectiveness across different ethnic groups is less clear, as most studies failed to specify the ethnicity of the children. The effect size for Parent Training in behavior management is moderate, suggesting that the average treated child scored better than 81% of children's scores before the intervention.

Multisystemic Therapy (MST) was tested primarily on male adolescents involved with the criminal justice

Table 7. Effective Interventions for Disruptive Behavior and Willful Misconduct Problems (Including Oppositional Defiant and Conduct Disorders)

Intervention	Train	Compliance	Gender	Age	Ethnicity	Therapist	Frequency	Duration	Format	Setting	Robustness	Cost	Effect Size
Level 1													
Parent Training	High	96%	> 75% male	3 to 15	64% Not Specified; 27% Caucasian; 6% African American; 3% Hispanic American	Self; MA; PhD	Weekly	2 weeks to 6 months; most ~ 13 weeks	Self administered; Video; Parent Group; Parent Individual	Clinic; Home	High	Low	0.89[a]
Level 2													
Anger Coping	High	*	100% male	9 to 15	55% Not Specified; 27% Caucasian; 18% African American	Not Specified; School Counselor	Weekly	7 to 18 weeks	Group	School	Moderate	Low	0.55[b]
Assertive-ness Training	*	Not Specified	100% Male	13 to 14	100% African American	Not Specified	2/week	4 weeks	Group	Clinic	Low	Low	Not Specified
MST	Mod/ High	85%	>75% Male	10 to 17	59% African American; 41% Caucasian	MA	Daily to Weekly	3 to 5 months	Individual	Home; School	Moderate	Moderate	0.5[c]
Problem Solving Skills Training	High	85%	78% male	7 to 13	65% Caucasian; 35% African American	MA	2 to 3 times/week to weekly	7 weeks to 8 months	Individual	In-patient; Clinic	High	Moderate to Low	1.59[d]
RET	Mod	*	both	15 to 17	African American; Hispanic	MA	Daily	12 Weeks	Group	Clinic	Low	Low	3.07[e]

Note. MST = Multisystemic Therapy; RET = Rational Emotive Therapy; "Mod" = Moderate; "Train" = Trainability; "N/A" = not reported; Effect sizes reported are the median effect size across all relevant studies (a = Child Behavior Checklist-Total Problems Scale; Achenbach, 1991; b = Missouri Child Behavior Checklist-Aggression Subscale; Sines, 1986; c = Revised Behavior Problem Checklist; Quay & Peterson 1987, 1996; d = Child Behavior Checklist-Externalizing Scale; Achenbach, 1991; e = observations of disruptive classroom behavior). * Could not be estimated due to lack of information in published reports.

system. The majority of these adolescents were African American. Cost was higher than for most traditional clinic-based interventions, given the higher intensity of contact. The effect size for Multisystemic Therapy was modest, suggesting that the average treated child scored better than 69% of children's scores before the intervention. Also, the robustness of this intervention was rated as moderate, given the suggestions that an elaborate and highly orchestrated supervision network appears to account for much of the success of the intervention. Consistent with this observation, no studies to date support MST other than those conducted by its developers. Nevertheless, the support for the effectiveness of Multisystemic Therapy is excellent, given that it has been tested with some of the most challenging youth within this category, and that it is one of the only interventions that has demonstrated superiority to realistic and commonly employed alternative interventions. For example, although MST was rated as moderately costly, it appears to be less costly and to provide greater benefit for youth with willful misconduct than its current alternatives.

Problem Solving Skills Training was tested with mostly young boys, about one-third African American, two-thirds Caucasian. Sessions were usually weekly, and were successfully delivered in both clinic and inpatient settings. Its effect size was large, suggesting that the average treated child scored better than 94% of children's scores before the intervention. Overall, the research suggests that Problem Solving Skills Training may be a reasonably alternative to Parent Training in behavior management for younger children with disruptive or oppositional behavior.

Anger Coping Therapy was tested with children from 9 to 18, with two different variants of the therapy for children and for teens. The interventions were group interventions administered at school. The effect size was modest, suggesting that the average treated child scored better than 71% of children's scores before the intervention. Robustness was rated as moderate, given that the children did not appear initially to be as severe as some children evaluated in other studies. Anger Coping Therapy may be an alternative to other interventions in this area for mild cases. Given its group format, however, it is not recommended as a first choice.

Assertiveness Training was tested in a single study with an African American middle school sample. It involved 8 sessions over 4 weeks. Limited information is available regarding compliance and effect size. It was judged to be only moderately robust. Concerns were noted about its group format.

Finally, Rational Emotive Therapy (RET) was supported in a single study of late adolescent ethnically mixed boys and girls, who demonstrated noncompliance or truancy. Rational Emotive Therapy also employed a group format, meeting once each weekday for 12 weeks. The intervention is notable in that it is one of the few to include a large proportion of girls, and thus may be a suitable intervention to consider for adolescent girls, particularly those not responding to interventions with stronger support. Its effect size on disruptive classroom behavior was rather large, with the average treated child demonstrating fewer problems than 99% of the group before the intervention. Cohort effects should also be noted, in that this single study was conducted in the mid 1970's, and its applicability to present day adolescents may be questionable.

Substance Use

All interventions with controlled outcome research for substance use problems and were reviewed and included: (a) Behavior Therapy/Management, (b) Cognitive Behavior Therapy (CBT), (c) Conjoint Family Therapy, (d) Family Drug Education, (e) Family Systems Therapy, (f) Family Effectiveness Training, (g) Supportive Group Therapy, (h) Individual Therapy, (i) Interactional Therapy, (j) Multisystemic Therapy (MST), (k) One Person Family Therapy, (l) Purdue Brief Family Therapy, (m) Strategic Structural Systems Engagement, (n) Supportive Therapy, and (o) Training in Parenting Skills.

"The literature points to CBT as the most promising, but is should be noted that there are few controlled studies of substance use problems, only two studies that support CBT, and those were in residential settings only."

Efficacy. Only CBT was supported at Level 1. This was based on two studies that found CBT superior to treatment-as-usual and to Interactional Therapy. Behavior Therapy and Management was supported at Level 2, with a single study documenting its superiority to Supportive Therapy. Purdue Brief Family Therapy was also supported at Level 2, with a single study showing it to be superior to Training in Parenting Skills. A single study supported Family Systems Therapy at Level 2, showing it to be superior both to Family Drug Education and to supportive group therapy. The literature points to CBT as the most promising, but is should be noted that there are few controlled studies of substance use problems,

Table 8. Effective Interventions for Substance Use

Program	Train	Compliance	Gender	Age	Ethnicity	Therapist	Frequency	Duration	Format	Setting	Robustness	Cost	Effect Size
Level 1													
CBT	High	71%	Both	11 to 18	42% Caucasian; 32% African American; 26% Not Specified	MA; PhD	Once or twice per week	10 to 12 weeks	Group	In-patient	Mod	Low	1.19
Level 2													
Behavior Therapy	High	*	77% Male	13 to 18	81% Caucasian; 19% Not Specified	BA; MA	2/week	6 months	Individual	Clinic	High	Low	4.20
Purdue Brief Family Therapy	Mod	82%	81% Male	12 to 22	Not Specified	N/A	Weekly	12 weeks	Individual	Clinic	Mod	Low	N/A
Family Systems Therapy	Mod	78%	N/A	11 to 20	68% Caucasian; 29% Hispanic American 2% African American	MA	Weekly	7 to 15 weeks	Individual	Clinic	Mod	Low	N/A

Note. "Mod" = Moderate; "Train" = Trainability; "N/A" = not reported; Effect sizes reported are the median effect size across all relevant studies * Could not be estimated due to lack of information in published reports.

only two studies that support CBT, and those were in residential settings only. There was no reliable support found for Conjoint Family Therapy, Family Drug Education, Family Effectiveness Training, Group Therapy, Individual Therapy, Interactional Therapy, Multisystemic Therapy, One-Person Family Therapy, Strategic Structural Systems Engagement, Supportive Therapy, or Training in Parenting Skills in terms of reducing substance use.

Effectiveness. CBT was only evaluated in a juvenile detention center and in a partial hospitalization program, and even within these, the dropout rates were high. There was some concern that the positive results observed might not be maintained in a less restrictive environment. CBT was used with mostly adolescent boys and girls, and was delivered by Master's and PhD level therapists. The effect size was high, with the average child at the end scoring better than 94% of the pre-test scores on a measure of self-reported drinking. Some concerns were raised about the validity of self-report as an outcome measure for CBT.

Behavior Therapy/Management was used with adolescents, who were mostly Caucasian males and involved 2 individual sessions per week for 6 months. Therapists were Master's and BA level. Due to the comparatively higher number of sessions, the intervention was rated as Moderate/Low in cost. The primary outcome variable was urinalysis, and the effect size was very high, with the average participant at the end scoring better than 99.9% of the pre-test urinalysis scores.

Purdue Brief Family Therapy was used with mostly male adolescents and young adults in an outpatient clinic. It meets weekly for 12 individual sessions. No information was available about ethnicity of the participants or the training of the therapists. This intervention was rated as only moderately trainable. Dropout rates were moderately high, and no information was available on effect size. Some concerns were raised regarding the main outcome variable, which was a self-report of substance use problems.

Family Systems Therapy was used with adolescents and young adults, with weekly individual sessions for a flexible period of 7 to 15 weeks. Like Purdue Brief Family Therapy, this intervention was rated as only moderately trainable. Dropout rates were somewhat high. This intervention also used self-reported estimates of substance use problems as its primary outcome measure.

In summary, there does not seem to be exceptionally strong support for any single intervention for substance use problems. Nevertheless, CBT has been shown to be successful twice when used in a relatively restrictive setting and may be appropriate there. More research is needed to address whether CBT is an appropriate outpatient intervention for substance use problems. Of the Level 2 interventions, Behavior Therapy/Management demonstrated the largest effects and was the only intervention that employed a more conservative measure of outcome. Given its support in an outpatient setting, Behavior Therapy/Management may be a reasonable alternative to CBT.

School-Based Interventions

Controlled studies of interventions for non-specific populations that were delivered solely within a school setting were reviewed. These interventions were applied to a variety of identified emotional and behavioral problems. As noted elsewhere in this report, these programs are not the only interventions suitable for application in a school setting. Many of interventions discussed already have been successfully applied within the school setting. The interventions reviewed here included: (a) Project Achieve, (b), (c) Social Relations Training, (d) Gottfredson's program for managing adolescent behavior, (e) Art Activity Counseling, (f) Social Skills Training, (g) Wisconsin Early Intervention Program, (h) Anger Coping-Self Instruction Training (AC-SIT), (i) Promoting Alternative Thinking Strategies (PATHS), and (j) Fast Track Program.

"Overall, there were at least three school-based programs identified as promising for handling or preventing disruptive behavior, although there is some question about the magnitude of their effects."

Efficacy. None of the interventions identified were supported at Level 1. AC-SIT, a manualized program for the reduction of disruptive and aggressive behavior, was supported at Level 2, having been found superior to the Anger Coping Intervention in one study using a comparison group design. The PATHS program was also supported at Level 2, having been found superior to standard classroom instruction in increasing children's ability to identify and manage emotions. The Fast Track program was also supported at Level 2, having been found superior to standard classroom instruction in improving a wide range in indicators of functioning including reduced conduct problems, improved academic skills, and increased peer interaction.

Two interventions were supported at Level 3. Project ACHIEVE was supported at Level 3 with a single study demonstrating its superiority in

Table 9. Effective School-Based Programs

Program	Train	Compliance	Gender	Age	Ethnicity	Therapist	Frequency	Duration	Format	Setting	Robustness	Cost	Effect Size
Level 2													
AC-SIT	High	*	100% Male	9 to 11	50% African American; 50% Caucasian	N/A	Weekly	18 weeks	Group	School	Low	Low	N/A
PATHS	High	*	Both	6 to 11	58% Caucasian; 32% African American; 4% Asian American	Teachers	Three times per week	20 weeks	Whole Classroom	School	Low	Low	N/A
Fast Track	High	*	Both	1st gr.	51% African American; 47% Caucasian; 2% Hispanic, Pacific Islander	Teachers	Two to three times per week	8 months	Whole Classroom	School	Low	Low	0.16[a]
Level 3													
Project ACHIEVE	High	*	N/A	1st to 3rd gr.	59% Caucasian; 38% African American; 19% Other	Teachers	Daily	3 years	Whole School	School	Low	Low	N/A
Social Relations	High	*	Both	3rd gr.	100% African American	MA, Ph.D.	Twice per week	17 weeks	Individual and Group	School	Low	Low	N/A

Note. "Mod" = Moderate; "Train" = Trainability; "N/A" = not reported; Effect sizes reported are the median effect size across all relevant studies * Could not be estimated due to lack of information in published reports. a = Achenbach Teacher Report Form, Externalizing Scale (Achenbach, 1991).

one school to a matched comparison school implementing treatment as usual. Social Relations Training was also supported at Level 3, demonstrating in one study its superiority to usual school counseling services for aggressive-rejected children.

The evidence did not establish the efficacy of the Gottfredson et al. (1993) program for managing adolescent behavior due to non-random assignment of treatment and control conditions. In addition, there was insufficient evidence to demonstrate the efficacy of Art Activity Counseling, as only a single study comparing the experimental group to a non-active control was conducted. Moreover, the evidence did not support the efficacy of the Wisconsin Early Intervention Program for the reduction of aggressive and moody/shy/withdrawn behavior. Children in both the social skills training condition and the consultation only condition improved their competencies and behavior suggesting that the treatment was not more effective than the placebo condition.

Overall, there were at least three school-based programs identified as promising for handling or preventing disruptive behavior, although there is some question about the magnitude of their effects.

Effectiveness. The AC-SIT program was implemented at two schools to 9 to 11 year-old boys who were identified by their teachers as the most disruptive and aggressive in their classes. The sample was equally divided between African-American and Caucasian boys. The annual family income of the majority of participants was less than $15,000. This short-term treatment took place at the boys' schools in a group format that met weekly. In addition, teachers completed daily monitoring and maintenance of rewards systems. Two co-therapists that were supervised weekly led the groups. The training of the two co-therapists was not reported. Although both treatments resulted in increased on-task behavior and improved self-esteem, only the AC-SIT resulted a significant decrease in disruptive-aggressive off-task behavior.

The PATHs manualized curriculum was applied to 167 males and 119 females, ranging in age from 6 to 11 years. Sixty-four percent of the children receiving the intervention were in regular education placements, while the other 36% were in Special Education placements. Fifty-eight percent of the sample were Caucasian, 32% African American, 4% Asian American, 2% Native American, and 2% Filipino American. The program was implemented by teachers, who received one three-day training and weekly consultation and supervision by a project supervisor. The children received the lessons in 20-30 minute intervals, three times per week.

The Fast Track program was used with 891 behaviorally disruptive first grade children. The sample was 51% African American, 47% Caucasian, and 2% Hispanic and Pacific Islander. The sample was 69% boys. Parents were paid for participation in instructional and enrichment classes. Teachers implemented Fast Track lessons 2 to 3 times per week and received support, consultation, and monitoring from educational coordinators of the program.

Project ACHIEVE was only evaluated in a single elementary school whose students have predominantly low socioeconomic backgrounds. Fifty-nine percent of the children participating in the program were Caucasian, 38% were African American, and 19% were identified as Other. The staff at the school received multiple school-wide trainings followed by technical assistance and follow-up by two project directors. Project directors were available on-site a minimum of 2 days per week. The school-wide program lasted 3 years. The program appeared to benefit younger children (1st grade) more than older children (3rd grade) with respect to academic progress.

Social Relations Training was applied only to African American third-grade children from a school serving predominantly lower-middle socioeconomic status homes. The children were selected for participation in the study based upon peer nomination as aggressive and/or socially rejected. Sixty percent of families who were asked to have their child participate in the study consented. Fifty-two percent of participating children were boys. Psychology graduate students and one doctoral level psychologist provided the intervention. All staff received two weeks of training and ongoing supervision throughout the project. The intervention included both individual and group sessions and lasted approximately 6-7 months.

Services Interventions

Controlled studies comparing the relative benefit of using one method of service delivery over another were reviewed. Given the wide range of service delivery methods, this review should be considered a preliminary step toward summarizing the literature in this domain. The service delivery methods that have been reviewed thus far include: (a) Case Management, (b) Multidimensional Treatment Foster Care, (c) Community-Care Team Treatment, (d) Inpatient Treatment, (e) Outpatient individual psychotherapy, (f) Family Therapy, (g) Family Therapy plus Engagement, (h) Group

Table 10. Effective Services Interventions

Intervention	Train	Compliance	Gender	Age	Ethnicity	Therapist	Frequency	Duration	Format	Setting	Robustness	Cost	Effect Size
Level 2													
Multi-dimensional Treatment Foster Care	Mod	*	Both	9 to 18	85% Caucasian; 6% African American; 3% American Indian	Foster parents	Daily	9 months	Foster Care	Foster Home	Low	High	0.73[a]
Level 3													
Wrap Around Foster Care	Mod	*	Both	7 to 15	61% Caucasian; 36% African American	BA, MA, Foster parents	Daily	Variable, most under 18 months	Foster Care	Foster Home	Low	High	0.50[b]

Note. "Mod" = Moderate; "Train" = Trainability; "N/A" = not reported; Effect sizes reported are the median effect size across all relevant studies. a = Elliot Behavior Checklist, General Delinquency Scale, Elliot et al., (1983); b = Achenbach Child Behavior Checklist, Externalizing Scale, Achenbach (1991).

Therapy, (i) Wrap-Around Foster Care, and (j) Day Treatment.

Efficacy. Two types of foster care were found to have evidence for their efficacy. Multidimensional Treatment Foster Care was supported at Level 2, having been found superior to community based programs for adolescents with conduct problems in two randomized trials. Wrap-Around Foster Care was supported at Level 3, having been found superior to standard practice foster care in reducing inattention, withdrawal, time spent incarcerated, and number of runaways. Wrap-Around Foster Care performed equally to standard practice foster care on all other measures of functioning.

"Two types of foster care were found to have evidence for their efficacy."

The evidence did not establish the efficacy of Case Management for youths with serious emotional disturbance, given the lack of differences in youth functioning as compared with usual care. Case management did however demonstrate some important differences on other variables. For example, children in the case management group received services at a less restrictive level and were likely to participate in services for a longer duration. No controlled research has been conducted on more intensive case management approaches, and so their contribution to clinical outcomes awaits future investigation.

A single study found that a short-term engagement protocol increased attendance and retention in a family therapy program versus family therapy alone.

In a separate study, there was no evidence for the superiority of inpatient treatment compared with a non-specific outpatient treatment for adolescents, following acute hospitalization. In fact, improvements were more substantial in the community group than in the inpatient group. There was no evidence for the efficacy of non-specific outpatient individual therapy or day treatment.

Effectiveness. Therapeutic Foster Care was used with 85% Caucasian, 6% African American, 6% Hispanic, and 3% American Indian adolescents between the ages of 12 and 17. Foster parents received 20 hours of pre-service training, participated in weekly, supervised group meetings with a supervisor, and could seek assistance at any time from an on-call supervisor. A second study of Therapeutic Foster Care suggests that the cost of the treatment is significantly less expensive than residential treatment for emotionally disturbed children.

"…There was no evidence for the superiority of inpatient treatment compared with a non-specific outpatient treatment for adolescents, following acute hospitalization…"

Wrap-Around Foster Care was used with 61% Caucasian, 36% African American, and 3% Hispanic children between the ages of 7 and 15. Sixty-one percent of participants were male. All participants were in the temporary custody of the state as part of the foster care system and had emotional or behavioral disturbances. The children came from lower income communities in both urban and rural settings. A bachelor's or master's degree was required for clinical case managers. Case managers coordinated a variety of others service providers as deemed necessary and received monthly supervision. The effect size of both types of foster care was moderate.

Bipolar Disorder and Other Mood Problems

Intervention identified. No controlled studies of interventions for youth diagnosed with Bipolar Disorder or other mood problems were found. This section includes relevant adult literature that may suggest promising directions for working with youth. In all of the studies reviewed, interventions were adjunctive to medication. No data on the effectiveness of these interventions for youth are available. The interventions reviewed were: (a) CBT, (b) Group CBT, (c) Interpersonal and Social Rhythm Therapy (IPSRT).

Efficacy. IPSRT was supported at Level 2 as an adjunctive treatment to pharmacotherapy. This manualized intervention proved superior to intensive clinical management for reducing recurrence and active symptoms in adults. The efficacy of CBT was not supported by the data due to the lack of an active control group in the one study reviewed. Similarly, the efficacy of Group CBT was not supported by the data due to the lack of an active control group in the two studies reviewed.

Schizophrenia

No controlled studies of interventions for youth diagnosed with schizophrenia were found. This review therefore included relevant adult literature that might suggest promising directions for working with youth having schizophrenia. In all of the studies reviewed, interventions were adjunctive to medication. No data on the effectiveness of these interventions for youth are available. The interventions reviewed were: (a) Family-Based Intervention (b) Behavioral Family Management (BFM), (c) Social Interventions, (d) Personal Therapy, (e) Family Therapy, (f) Personal Therapy combined with Family Therapy, (g) Supportive Family

Management (SFM), and (h) Applied Family Management (AFM).

Efficacy. A Family-Based Intervention was supported at Level 3, having demonstrated it superiority to standard outpatient care in reducing hospitalizations and relapse and increasing months of employment. BFM was supported at Level 3, having demonstrated its superiority to standard outpatient care in reducing instances of symptom exacerbation. Social Interventions were also supported at Level 3 when used in conjunction with medication, having significantly lower relapse rates than medication maintenance alone. A second study suggests that the Family Therapy and Relatives Group components of Social Interventions do not differ significantly in their ability to reduce relapse rates. Attendance had a significant impact in this study such that patients whose families did not participate in the Relatives Group had significantly worse outcomes.

No significant difference was found between SFM and AFM on reducing hospitalization. However, the data from one study suggest that medication compliance and continued attendance in the maintenance phase of treatment was predicted by participation in either intervention.

Personal Therapy was supported at Level 3, having demonstrated its superiority to Family Therapy alone and supportive therapy in reducing psychotic relapse rates. Combining Personal Therapy and Family Therapy did not appear to improve outcomes. The data from the study suggest that Personal Therapy appears to have its strongest impact during the first year after discharge from the hospital as compared with two or three years after discharge.

Effectiveness. Given that these data came entirely from research with adults, effectiveness data are not reviewed here. No assumptions should be made about the applicability of the efficacy findings on schizophrenia interventions to youth populations.

Section II: Randomized and Controlled Medication Research

Overview and Methods

The pediatric psychopharmacology literature was summarized through the synthesis of two major scientific reviews: the May 1999 special section of the *Journal of the American Academy of Child and Adolescent Psychiatry* and the February 2001 Technical Report on Psychiatric Medications, prepared by the National Association of State Mental Health Program Directors Medical Directors Council and the National Association of State Medicaid Directors, with funding provided by the Center for Mental Health Services of SAMHSA.

The literature reviewed describes the safety and efficacy of medications for a variety of child and adolescent neurological and mental disorders. Prior to a medication approval by the Food and Drug Administration (FDA), extensive tissue culture and animal studies are conducted to establish probable safety, followed by human studies with adult patients who consent to inclusion in studies with placebo controls and randomization to active and placebo intervention groups. After the human safety and efficacy are established, the medication may be dispensed with literature that lists the specific indications and disorders for which the medication has demonstrated efficacy. Caveats in this dispensing literature specify for which ages the medication is not recommended due to lack of studies; this information is updated at least annually in standard pharmaceutical manuals. This approval process requires research that includes randomized, double-blind, placebo-controlled (DBPC) trials which are replicated in several studies and which document in detail the side effects and risks of the medication. Almost all of this preliminary research is conducted on adults with the problems for which the medications are being developed. Research has been conducted far less frequently for specific age groups below 12.

Improved antipsychotic medications, anticonvulsant medications with mood stabilizing effects and a new generation of antidepressant medications continue to be introduced in the US at an ever-increasing rate. However, studies in adolescent and pediatric populations have only rarely been conducted to verify both safety and efficacy in youth.

Pharmaceutical companies generally are satisfied to achieve approval for adults as this approval allows physicians to prescribe for disorders and populations other than those that the original research supports. This practice is called "off label" use. The pharmaceutical industry is not inclined or obligated by FDA requirements to conduct further research. Added costs, consent factors and parental resistance in younger populations related to having a child used in a research study under the necessary conditions result in disincentives to research with younger subjects.

Few studies are long-term, although long-term safety is an important issue with medications for disorders that present in youth and persist into adulthood. In the US, the FDA approval process is more detailed and complex, allowing many years of use to accumulate in other countries prior to approval for use in the US. The

FDA has an adverse reaction reporting mechanism that continues to collect reports of adverse reactions and other side effects after a medication is approved. As FDA data accumulate, the pharmaceutical dispensing literature and the scientific literature are updated. This includes changes in the recommendations for monitoring medications. Rare adverse effects and effects which take long exposure to emerge often appear only after many years. In recent years, this process has resulted in profound changes in prescribing practices for medications that continue to be approved for use. For example, in the mid-1980s, a medication for depression had serious, potentially lethal, hematological side effects emerge shortly after release; it was very quickly withdrawn from the US market. In the past three years, pemoline (Cylert®) has changed from an occasionally prescribed second order medication to a rarely prescribed long-acting stimulant medication because of reports of a rare and potentially lethal hepatotoxicity. The recommendation for frequent liver function blood tests is a further disincentive to prescription of this medication.

In this document, generic names of medications are matched with their more common brand names. Medication management is not a service provided in isolation from other interventions or instead of other interventions. Studies of combined medication management with intensive case management and additional psychosocial rehabilitation services document better intervention compliance and better outcomes. This guideline summarizes reviews of the major classes of medications used with child and adolescent mental disorders.

The criteria for evaluating medication efficacy and safety are similar to those outlined in section I for psychosocial interventions and services. Briefly, these require at least two randomized controlled trials in youth for the highest efficacy and short-term safety rating (A) and epidemiological evidence and/or minimal adverse incident report to the Food and Drug Administration for the highest long term safety rating (A). A single randomized controlled trial in youth or mixed results from several trials earn a rating of B for safety and efficacy. The lack of any controlled evidence in youth earns a rating of C. Thus, A would be similar to a Level 1 rating in the section above, B would be similar to a Level 2 or 3 rating, and C would be similar to a Level 4 rating from section I. Different classification labels (A, B, C, instead of Levels 1. through 5) were maintained to emphasize the fact that different review methodologies were employed across psychosocial interventions and psychopharmacology, with the Section I review being the most scientifically conservative and relying only on exhaustive review and coding of original research. The psychopharmacology subcommittee continues to review and incorporate new research to update the summary that follows.

Table 11. Medication Ratings

	Short Term Efficacy	Long Term Efficacy	Short Term Safety	Long Term Safety
A	≥2 RCTs	≥2 RCTs	≥2 RCTs	epidemiological data; minimal FDA incident reports
B	1 RCT	1 RCT	1 RCT	1 RCT
C	Uncontrolled findings	Uncontrolled findings	Uncontrolled findings	Uncontrolled findings

RCT = Randomized Clinical Trial; FDA= Food and Drug Administration. The table above is adapted with permission from Jensen et al. (1999), Psychoactive Medication Prescribing Practices for U.S. Children: Gaps Between Research and Clinical Practice, *Journal of the American Academy of Child and Adolescent Psychiatry, 38*: 557-565.

Results

Psychostimulants

The medications of this class have similar side effects and safety. All have been in use in the US for more than twenty years. This class includes:

- Methylphenidate, available as Ritalin® and numerous generic brand names,
- Dextro-amphetamine, available as Dexedrine®, and mixed salts of dextro-amphetamine and inactive levo-amphetamine, available as Adderall® and
- Pemoline, available as Cylert®.

The literature of over 160 replicated randomized controlled trials demonstrate robust short-time efficacy and a good safety profile when used for the symptoms of Attention Deficit Hyperactivity Disorder (ADHD); five of these studies were conducted in preschool age children. Few studies lasting longer than 24 months have been conducted which demonstrate longer-term efficacy. Side effects are manageable with monitoring, dose and timing adjustment and matching medication to the needs of the patient. Generally, patients continue to respond to the same dose over time without a need to increase the dose; there is little evidence for the

development of tolerance. As most of these medications have rapid absorption and rapid metabolism, they are short in duration with onset of effect within 30 minutes, peak within one to three hours, and rarely have an effect beyond five hours. Thus, most patients require multiple doses and demonstrate some "roller-coaster" effect; some have a "rebound" effect with short-term intense "wear off" effects. These effects are related to the short duration of effect and account for much of the reported poor compliance with use as prescribed on a multiple-dosing schedule. A multiple dosing of schedule II controlled medications also complicates management in schools, leading to further problems with compliance. Thus, compliance with the multiple doses that produce improved school and home behavior and performance is a concern with these short-acting medications.

Stimulant-related adverse effects may occur early in intervention and are generally mild, short-lived, and responsive to dose and timing adjustments. Severe adverse effects, which necessitate discontinuation of medication, occur in less than 10% of patients. The most common adverse effects are delayed sleep onset, reduced appetite, stomachache, headache, and jitteriness. Rare side effects include perseverative behaviors, cognitive impairments, and motor and/or vocal tics, which usually respond to dose and timing adjustments. Hallucinosis, psychotic reactions, and mood disturbance have been reported only in overdoses and in patients receiving high doses of stimulants.

Abuse is a concern, although emergency room reporting in the Drug Abuse Warning Network documents the prescription stimulant abuse rate at less than 1/40th of the rate for cocaine. Abusers generally prefer substances, which produce euphoria such as methamphetamine and cocaine. The majority of studies do not suggest that the use of prescribed stimulants for ADHD increases the risk of abuse.

Pemoline is the only stimulant that has a longer effect than the approximately five-hour effect described with methylphenidate and dextro-amphetamine. Long-term use of pemoline has been associated with rare, but increased, risk of hepatotoxicity, which has resulted in cautionary recommendations for frequent liver function testing as noted in the Introduction.

Methylphenidate has recently been released in a longer-acting product, Concerta®, which may improve compliance with stimulant medication.

In the NIMH Collaborative Multisite Multimodal Treatment Study (MTA) of children with ADHD, compliance was highest in the study group receiving monthly physician monitoring, school and family behavioral management training. Compliance studies with a variety of medications demonstrate improved compliance with less frequent dosing; once a day dosing produces the greatest rate of compliance.

Monitoring of stimulant medication includes observation and mental status monitoring as well as focused physical examinations with particular attention to movement disorders, tics, tremors, and a regular schedule of monitoring heart rate and blood pressure as well as stature and weight changes. After titration to an effective dose and timing schedule, monitoring can be reduced to less than five follow-ups per year, with parents and teachers aware of the medication and potential adverse effects. The regularity of schedule follow up is a factor in improving compliance. Parent and teacher completion of rating scales and school progress reports are important components of assessing the effects of stimulants and other interventions. Continuous performance testing may also be helpful in documenting changes in inattention, impulsivity, and distractibility related to medication dose and timing.

Tricyclic Antidepressants

The medications of this class have been in use for more than twenty years. Tricyclic antidepressants (TCAs) affect a number of neurotransmitter/receptor systems in the central nervous system, but their action is believed to be primarily based on effects on the serotonergic system. This class includes medications such as the following (not a complete listing), which are all available in generic form:

- Imipramine (Tofranil®), the most-studied TCA,
- Desipramine (Norpramin®),
- Amitriptyline (Elavil®),
- Nortripyline (Pamelor®), and
- Clomipramine (Anafranil®), a TCA with many specific studies related to obsessive-compulsive disorder.

Early research in child and adolescent mental disorders investigated imipramine in DBPC studies of efficacy with school phobia and separation anxiety; imipramine was superior to placebo in reducing anxiety and school refusal. Subsequent studies were conducted, investigating imipramine and desipramine for ADHD in comparisons with placebo, methylphenidate and clonidine in patients randomly assigned to intervention or placebo groups; imipramine and desipramine proved superior to placebo and variable in efficacy relative to methylphenidate,

with all three active medications superior to placebo. Many other DBPC studies have been conducted with imipramine, desipramine, amitriptyline, and nortriptyline for efficacy with major depressive disorders; all of these TCAs studies demonstrated superiority to placebo in reducing depressive symptomatology.

Clomipramine has been investigated in DBPC and double-blind crossover studies for efficacy with obsessive-compulsive disorder, depression, and autistic disorder. Clomipramine had superior efficacy to placebo and to desipramine in four studies for depression and one study for ritualized, repetitive behaviors of autism. Many DBPC studies have demonstrated the efficacy of imipramine for control of nocturnal enuresis.

Despite demonstrable efficacy for a number of child and adolescent mental disorders in randomized controlled studies, concerns persist about the safety of these medications in children. Overdoses of these medications are potentially lethal. Cardiovascular adverse effects have been reported including rare reports of sudden death in youth treated with desipramine and imipramine. Similar arrhythmias have been noted with clomipramine including persistent tachycardia. Sweating, dry mouth, urinary retention, and constipation are reported adverse effects with this class of medications. Psychiatric and medical complications can include serotonergic syndrome and induction of mania.

With the availability of a new generation of medications with potential efficacy in the same disorders and a much-decreased incidence of adverse reactions, these medications have become useful only after intervention failures or for specific contra-indications with other safer medications. These medications require careful monitoring for medical and psychiatric adverse reactions.

Nontricyclic Antidepressants

This group includes medications with greater neurotransmitter and receptor specificity in the nervous system than the TCAs, which affect multiple neurotransmitters and receptor sites; with this greater specificity, fewer unwanted effects occur. This class includes:

- Selective serotonin reuptake inhibitors (SSRIs; partial listing)
  1. Fluoxetine (Prozac®)
  2. Sertraline (Zoloft®)
  3. Fluvoxamine (Luvox®)
  4. Paroxetine (Paxil®)
  5. Citalopram (Celexa®)
- Other antidepressant medications, affecting alternative neurotransmitter/receptor systems (partial listing)
  1. Bupropion (Wellbutrin®)
  2. Venlafaxine (Effexor®)
  3. Nefazodone (Serzone®)
- Monoamine oxidase inhibitors (MAOIs; partial listing)
  1. Phenelzine (Nardil®)
  2. Tranylcypromine (Parnate®)
  3. Pargyline (Eutron®)

With SSRIs, the majority of the studies involve the efficacy of fluoxetine for the intervention of major depressive disorders. The data in double-blind, placebo-controlled studies support the effectiveness of SSRIs in the short-term intervention of relatively severe, persistent major depressive disorders in children and adolescents. Fluvoxamine and sertraline have been studied in DBPC studies involving children and adolescents with obsessive-compulsive disorder with demonstrated superiority in symptom reduction compared to placebo. Both are approved for the intervention of obsessive-compulsive disorder in children. A single DBPC study of fluoxetine supports effectiveness with selective mutism in children aged 5 to 14. For Tourette's disorder and ADHD, the data for effectiveness for SSRI intervention is mixed and lacks DBPC studies.

The second group including bupropion, venlafaxine and nafazodone are not impressive for child and adolescent patients with ADHD, depression, or anxiety in published studies. Almost all of these studies are small, open label, and lack controls, except for a single unreplicated DBPC study of bupropion demonstrating efficacy for ADHD.

With MAOIs, adult experience reserves the use of MAOIs to TCA-refractory severe psychiatric disorders in adults. These medications require careful attention to the avoidance of foods and medications containing the amino acid tyramine, which in combination with MAOIs may precipitate potentially lethal hypertensive crises. Newer MAOIs with reduced risk of food and medication interactions are under investigation in Europe. Only five limited studies of MAOI use in children have been published.

Few data are available on the safety of SSRIs, MAOIs, and bupropion, venlafaxine, and nafazadone in children and adolescents. Bupropion in high doses has been reported to increase the risk of seizures. All of the currently available antidepressants have a risk of induction of mania. Many of the SSRIs and TCAs have a risk of the emergence of a

serotonergic syndrome. In addition, there are concerns that efficacy studies in adults may not be appropriately generalized to children with differing metabolisms, differing presentations, and possibly differing etiologies for similarly presenting disorders.

Mood Stabilizers

During the 1980s and 1990s, the efficacy of anticonvulsant mood stabilizers in adult bipolar disorder was demonstrated in multiple DBPC studies, adding these medications to lithium and antipsychotics as effective medications for bipolar disorder. The mood stabilizers include:

- Lithium salts (Lithobid®, Eskalith®, Lithonate®)
- Anticonvulsants
    1. Carbamazepine (Tegretol®)
    2. Valproate (Depakote® and Depakene®) and
    3. Novel anticonvulsants including gabapentin (Neurontin®) and lamotrigine (Lamictal®)

These medications have been studied for use in treating bipolar disorder, conduct disorder, severe aggression, and ADHD.

Lithium previously was the most commonly used FDA approved medication for bipolar disorder before the anticonvulsant mood stabilizing effect was demonstrated. Only a single lithium study appears which is DBPC and demonstrates efficacy of lithium with bipolar disorder in adolescents. The FDA has approved lithium for adolescents who are 12 or older for the indication of bipolar disorder. Lithium use requires lithium blood level monitoring and blood tests for renal and thyroid toxicity on a regular schedule. Overdose is potentially lethal.

Regarding Carbamazepine (CBZ) and valproate, there are two NIMH ongoing controlled studies of mood stabilizers in adolescents. Four DBPC studies on children and adolescents with aggression and conduct disorder have mixed results. Carbamazepine has been used for seizure disorders for many years and its safety and side effects are well documented. Common side effects include drowsiness, loss of coordination, and vertigo. Rarely, hematological, dermatological, hepatic, and pancreatic effects occur. The FDA labeling does not include approval for any psychiatric disorders although the adult literature has demonstrated its effectiveness for bipolar disorders in DBPC studies. Valproate also has a long history as an anticonvulsant with known side effects. Common side effects include sedation, nausea, blood dyscrasias, tremor, and weight gain. Rarely, hepatotoxicity has occurred in very young children, predominantly those under two years of age, who have seizures and other complex medical problems. Psychiatric use of valproate generally has not involved children this young. A metabolic syndrome with obesity, hyperinsulinism, lipid abnormalities, polycystic ovaries, and hyperandrogenism has been reported in women under 20 who have been treated with long-term valproate for seizures.

Lithium, CBZ, and valproate require regularly scheduled and careful medical monitoring, blood levels, and laboratory tests for adverse effects.

Novel anticonvulsants including gabapentin (Neurontin®) and lamotrigine (Lamictal®): These medications lack data for efficacy in child and adolescent mental disorders in DBPC studies. Although there are many open trials and case studies presented in the literature and the disorders for which these medications are prescribed are considered severe, chronic, or intractable, insufficient data exist concerning both efficacy and safety.

Antipsychotics

Antipsychotics are used in children and adolescents for psychotic disorders and a variety of more severe and intractable disorders including autism, Tourette's disorder, and disorders in the mentally retarded that include severe behavioral and mood disorders and psychosis. These medications include:

- First generation antipsychotics (partial listing)
    1. Haloperidol (Haldol®)
    2. Clorpromazine (Thorazine®)
    3. Thiothixene (Navane®)
    4. Pimozide (Orap®)
    5. Thioridazine (Mellaril®)
- Atypical antipsychotics (partial listing)
    1. Clozapine (Clozaril®)
    2. Risperidone (Risperidal®)
    3. Olanzapine (Zyprexa®)
    4. Quetiapine (Seroquel®)

Over 68 well-designed efficacy studies with DBPC and crossover studies comparing antipsychotics have been published.

Autism: Studies targeting stereotypies, self-injurious behaviors, aggression, temper tantrums, and hyperactivity have demonstrated the superiority of haloperidol over placebo in children from 2 to 8 years of age. Other open label medication trials are suggestive that other antipsychotics, including two of the atypical antipsychotics, have similar efficacy, but these studies lack the scientific rigor of the haloperidol studies.

Schizophrenia: Many well-designed studies confirm the superiority of haloperidol over placebo in adolescents with this disorder. A single DBPC study involving children from 5.5 to 11.75 years of age also demonstrated haloperidol superiority over placebo for controlling psychotic symptomatology. Other more limited studies have compared haloperidol with other first generation antipsychotics; haloperidol and the comparison antipsychotics were similarly effective and had similar side effects. Sedation and the development of parkinson syndrome are the most common adverse effects; however, serious long-term and potentially irreversible extrapyramidal effects such as tardive and other dykinesias remain a concern with the first generation antipsychotics. Generally, they are less effective with the negative signs of schizophrenia. Clozapine has been compared with haloperidol in a DBPC study involving adolescents and is superior to haloperidol on all measures of psychosis including negative signs. The incidence of extrapyramidal side effects is rare with clozapine; however, seizures, neutropenia, and other hematological complications are increased in incidence with clozapine use. Risperidone, another atypical antipsychotic with a similar profile to clozapine, is associated with a higher rate of extrapyramidal complications but fewer hematological complications. Weight gain and an increased risk of developing diabetes is a concern with most of the first generation and atypical antipsychotics.

Tourette's disorder: Three DBPC studies demonstrate superiority of antipsychotics over placebo for control of the motor and vocal tics of Tourette's disorder. Most of the published research on antipsychotic efficacy in Tourette's disorder involves either haloperidol or pimozide, both of which have similar efficacy. Pimozide, has, in addition to the above-noted adverse reactions, the potential for serious arrhythmias, which necessitate ECG monitoring before intervention, periodically during intervention, and at dose changes.

Conduct disorder: The use of an antipsychotic medication in the intervention of a conduct disordered youth is justified only in situations with co-occurring severe and intractable disorders such as psychosis or Tourette's disorder that are not responsive to other interventions and medications with lower risk for adverse reactions. Haloperidol has demonstrated superiority over placebo in controlling the severe aggressiveness of some conduct-disordered youth in a DBPC study. Comparison with lithium: lithium has demonstrated a similar efficacy as haloperidol and superiority over placebo. Other first generation antipsychotics, including thioridazine and molidone have a similar efficacy reported in less rigorous studies.

Mental retardation: Hyperactivity and aggressiveness respond moderately to haloperidol and thioridazine in DBPC studies. The haloperidol study patients were adolescent and older, and the thioridazine study included patients between 4.1 and 16.5 years with a mean age of 10.0 years.

ADHD: DBPC studies in the 1970s demonstrated superiority of chlorpromazine, haloperidol and thioridazine over placebo in controlling hyperactivity and aggression. In this age, the use of an antipsychotic in the intervention of ADHD is justified only in situations with co-occurring severe and intractable disorders such as psychosis or Tourette's disorder that are not responsive to other medications with lower risk for adverse reactions.

Antipsychotics have significant risks of adverse effects and require careful medical and psychiatric monitoring. A thoughtful risk/benefit analysis is appropriate and usually limits the use of these medications to intervention of specific severe and intractable disorders.

Anxiolytics and Others

Many other medications have been prescribed for child and adolescent mental disorders. Few DBPC studies are reported, but the scant information from the literature is summarized by various classes of medications.

- Benzodiazepines
  1. Alprazolam (Xanax®)
  2. Clonazepam (Klonopin®)
  3. Diazepam (Valium®)
  4. Midazolam (Hypnovel®)
- 5-HT_{1A} agonists
  1. Buspirone (Buspar®)
- β-blockers
  1. Propranolol (Inderal®)
  2. Metoprolol (Lopressor®)
  3. Nadolol (Corgard®)
- α-adrenergic agonists
  1. Clonidine (Catapres®)
  2. Guanfacine (Tenex®)
- Opiate antagonists
  1. Naltrexone

Although benzodiazepines have been prescribed for children and adolescents, only clonazepam and alprazolam have been demonstrated to have superiority over placebo in DBPC studies for panic disorder and anxiety disorders. Anxiety associated with medical procedures responds to midazolam in DBPC studies; this medication is available only as a parenteral injection solution. Generally, these medications are safe

Table 12. Summary of Evidence in Pediatric Psychopharmacology

Category	Indication	Level of Supporting Data [a]			
		Short-Term Efficacy	Long-Term Efficacy	Short-Term Safety	Long-Term Safety
Stimulants	ADHD	A	B	A	A
SSRIs	Major depression	B	C	A	C
	OCD	A	C	A	C
	Anxiety disorders	C	C	C	C
Central adrenergic agonists	Tourette's disorder	B	C	B	C
	ADHD	C	C	C	C
Valproate and carbamazepine	Bipolar disorders	C	C	A[b]	A[b]
	Aggressive conduct	C	C	A	A[b]
TCAs	Major depression	C	C	B	B
	ADHD	B	C	B	B
Benzodiazepines	Anxiety disorders	C	C	C	C
Antipsychotics	Childhood schizophrenia & psychoses	B	C	C	B
	Tourette's disorder	A	C	B	B
Lithium	Bipolar disorders	B	C	B	C
	Aggressive conduct	B	C	C	C

Note: SSRI = selective serotonin reuptake inhibitor; TCA = tricyclic antidepressant; ADHD = attention-deficit hyperactivity disorder; OCD = obsessive-compulsive disorder.

[a] A = adequate data to inform prescribing practices; for efficacy and short-term safety: ≥ 2 randomized controlled trials (RCTs) in youth; for long-term safety: epidemiological evidence and/or minimal adverse incident report to the Food and Drug Administration. B = for efficacy and short-term safety: 1 RCT in youth or mixed results from ≥ RCTs. C = no controlled evidence.

[b] Safety data based on studies of children with seizure disorder.

The table above is adapted with permission from Jensen et al. (1999), Psychoactive Medication Prescribing Practices for U.S. Children: Gaps Between Research and Clinical Practice, *Journal of the American Academy of Child and Adolescent Psychiatry, 38*: 557-565.

and non-lethal even in overdose. The major side effects are drowsiness and sedation. In adults on long-term medication, there are concerns about the development of tolerance and dependency; this concern has not been adequately addressed in studies in children and adolescents.

Buspirone has been studied in open trails for anxiety, aggression, pervasive developmental disorders, and ADHD, but no DBPC studies have demonstrated efficacy for these or any other mental disorders of childhood or adolescence. Medications of this class are generally quite safe with only mild side effects of dizziness, stomachache, sedation, asthenia, or headache. There are no problems with withdrawal even after prolonged use.

The beta-blockers have been used for children and adolescents with anxiety and dyscontrol with aggression, but no systematic DBPC studies have been published. Adverse reactions include sedation, hypotension, bradycardia, and bronchoconstriction. There are reported concerns that growth hormone regulation may be disrupted, leading to over-release of growth hormone.

Clonidine and guanfacine are α-adrenergic agonists that have been used to treat hypertension since the 1960s. Since the 1970s, these medications have been used in Tourette's disorder, ADHD, ADHD complicated by Tourette's disorder or motor tics, autistic disorder, aggression, and sleep disorders related to stimulant intervention. DBPC studies have produced inconsistent results with these disorders. Adverse effects include cardiac arrhythmias, particularly when these medications are used in combination with others medications. Sudden deaths have been reported in children receiving the combination of methylphenidate and clonidine. Less serious adverse effects include sedation and hypotension.

Naltrexone is an opiate antagonist. Four DBPC studies demonstrate superiority over placebo in reduction of hyperactivity associated with autism. No significant effect on reduction of self-injurious behavior has been substantiated. There are no

long-term studies on the safety of naltrexone in children; adult use has been associated with hepatotoxicity in patients with a history of alcohol and drug abuse. Common mild side effects include drowsiness, anorexia, and vomiting. A single study on the use of naltrexone in Rett's disorder was associated with a more rapid decline in motor performance and a more rapid progression of the disorder in ten patients in the intervention group compared to a control group. Thus, the use of naltrexone is contraindicated in children with Rett's disorder.

Section III: Consensus Summaries

Methods

Section III consists of a review of uncontrolled research on topics that were nominated by non-members of the committee. For a topic to be considered, it first had to be judged critical to the functioning of child mental and behavioral health systems in the state of Hawaii. Consistent with the original recommendations of the APA Task Force on Psychological Intervention Guidelines (1995), topics were reviewed here only in the absence of unambiguous controlled research. In other words, if any such topic were possible to review in Section I, it was subject to that more rigorous methodology, and was not included here. In the event that strong, controlled research emerges on any of the following topics, the corresponding summary in this section will be removed and the topic will "graduate" to Section I.

These reviews represent informed consensus statements. They were completed by conducting a thorough search of the scientific literature on the proposed topic, which was read and discussed by members of the committee. Recent scholarly review papers in peer-reviewed journals were prioritized as sources of information, and these were supplemented when possible by original uncontrolled studies.

It should be noted that due to the nature of the literature reviewed and methodology behind issuing a consensus statement, these statements should be interpreted with great caution. Expert review is a serious departure from the methods of science. Numerous times in the scientific literature expert consensus and even correlational research have been proven false by subsequent controlled tests. Until such tests emerge, however, the following statements are those in which we are left to place our highest relative confidence.

Results

Seclusion and Restraint

Restraint is the involuntary immobilization of a person through the use of chemical, physical or mechanical means.

Seclusion is the involuntary confinement of a person in a room alone so that the person is physically prevented from leaving.

The use of seclusion or restraint is indicated when dangerous behavior to self or others must be prevented and when measures promoting the child's self-control or less restrictive options have failed or are impractical. At no time should the seclusion or restraint be considered a therapeutic modality. Rather, they are measures employed when an intervention has failed. There is little agreement regarding the utility and benefit of seclusion and restraint for children and adolescents. The collective research suggests that restraint and seclusion do not result in a reduction in incidence of aggression. The use of physical restraint and/or seclusion has multiple harmful effects including: increase potential for injury to staff and client, potential for actual or perceived abuse of children by staff, provoke running away, trigger increased physical aggression, increase self-destructive behavior, contribute to sensory deprivation effects, physical and mental deterioration and re-traumatize post-traumatic clients.

Research has shown that the development and implementation of policy can lead to a reduction in the use of seclusion and restraint. For example, the State of Pennsylvania implemented new policies regarding the use of seclusion and restraint, which was followed by a 65% reduction in incidents of restraint and a 70% reduction in incidents of seclusion. Massachusetts enacted a statewide law that regulated the use of restraint that also lead to a decreased rate of seclusion and restraint. In a psychiatric hospital in Virginia the administration introduced the concept of a multidisciplinary Behavior Management Committee to review incidences of restraint and seclusion and modify individualize plans as needed; this strategy led to an 89% reduction in the monthly use of seclusion and restraint.

Alternative behavioral strategies can be effective in helping to avoid or reduce the need for seclusion and restraint. Various lines of research show that the escalation of challenging behaviors can be reversed through positive procedures if they are used appropriately and systematically. Prevention of aggressive behavior begins during admission and continues in a format of ongoing assessment and throughout the intervention. Research has shown that the use of a token economy of rewards for positive behavior has led to reduction in the use of seclusion and restraints. In other research,

intensive staff training to support a restraint-free environment led to a 98% reduction in restraint and a 50% reduction in seclusion. Providing children with explicit instructions on the behavioral conditions that would terminate seclusion and restraint led to a 64% reduction in the use of these aversive techniques.

Differential reinforcement procedures (i.e., selective ignoring of unwanted behaviors and rewarding alternative behaviors) appear more effective in producing long-term improvements in behavior than reacting to the behavior in a punitive manner. Providing developmentally appropriate instruction in anger management and social skills also appears to help children and adolescents manage future crises.

There is evidence to suggest that, in addition to specific training, appropriate work environment (e.g. staff/client ratio) contributes to the ability of staff to implement positive procedures.

Staff training also affects the rate of seclusion and restraint. In some research, lack of training has led to reliance on unnecessarily restrictive interventions. Staff who have less exposure and training with regard to managing disruptive, aggressive behavior are more likely to rely on physical control. The inconsistency in the application of seclusion and restraint suggests that there must be consistency in the criteria for their use.

In terms of risk, the inappropriate use of seclusion and restraint has led to death through asphyxiation, airway obstruction, arrhythmias, vasovagal hyperactivity, pulmonary emboli and other fatal cardiovascular interactions. In the event that a child is exhibiting a behavior that is a danger to self or others and restraint or seclusion is necessary, staff must be trained in specific strategies that are developmentally appropriate for carrying out seclusion and physical or chemical restraint.

Neuropsychological Assessment

Neuropsychological assessment is a method designed to examine highly integrative cognitive functions, such as intelligence, as well as discrete and specific cognitive operations, such as visual, auditory, tactile perception, linguistic functioning, and memory. Traditionally, neuropsychological assessment has been employed in two major areas. The first area involves the need to characterize the cognitive consequences of head injury, stroke, and diseases that affect neural tissue in order to facilitate rehabilitation planning and decision making regarding educational, employment, or living arrangements. The second area involves the determination of the organic determinants of particular problems or syndromes.

More recently, such assessment strategies have also been employed in the context of evaluating learning disabilities. In this context, neuropsychological assessment is used to identify specific cognitive processing deficits that can become the target for cognitive and meta-cognitive interventions. Neuropsychological assessments may not be of incremental value when a comprehensive educational assessment has already been performed, unless there are compelling signs of injury or delay not accounted for in previous assessments.

Finally, neuropsychological assessment has recently been used to evaluate attention-deficit hyperactivity disorder (ADHD). Research to date suggests that the ecological validity of neuropsychological approaches with ADHD may still be unsatisfactory. In general, research regarding the assessment of ADHD points to the relative importance of observing target behaviors in natural settings and the use of more parsimonious, evidenced-based assessment tools.

In all areas, advances in the precision of neuropsychological assessment strategies have outpaced the knowledge regarding how such assessments actually inform the design of proven interventions. Additional progress in the development of cognitive rehabilitation strategies would be needed to justify their use of problems or syndromes for which evidenced-based interventions already exist. It follows that neuropsychological assessment should be employed judiciously and only when the following conditions are met:

1. when evidence-based instructional interventions and related supportive services have been attempted without successful outcomes,
2. when there is clear evidence that available alternative strategies are inappropriate or insufficient given the nature of the problem,
3. when the assessment results will have a clear effect in deciding which interventions will be employed, and
4. when circumstances warrant a larger evaluation, which may include, but is not limited to and does not require, such elements as prior cognitive testing, psychiatric or psychological clinical assessment, physical examination and/or medical tests.

Reactive Attachment Disorder

Reactive Attachment Disorder is defined in the Diagnostic and Statistical Manual of Mental

Disorders, Fourth Edition (DSM-IV) as a disorder with markedly disturbed and developmentally inappropriate social relatedness in most contexts that begins before age 5 years and is associated with grossly pathological care. There is a reasonable theoretical history behind the concept of attachment disorders. However, the evidence base is rather lacking. Specifically, no studies exist regarding the reliability of validity of reactive attachment diagnoses. Such an absence of evidence calls into question the utility of reactive attachment disorder as a descriptor of children's problems, particularly given the similarity of the appearance of these problems with other, much better understood problems, such as oppositional defiant disorder and anxiety disorders.

Further, those who have studied attachment estimate the population base rates for reactive attachment disorder at approximately 1 in 30,000 (although arguably such estimates are ambiguous, given the controversy over the validity of reactive attachment disorder itself). Assuming the validity of the diagnosis, this statistic would imply that for the 184,375 children in Hawaii public schools, that number would be 6.14, or about 6 children.

Perhaps most at issue with the concept of reactive attachment disorder is its lack of utility from the perspective of evidence-based practice. There are no studies of the treatment of disorders of attachment, and thus the label of reactive attachment disorder suggests little in terms of a credible plan of action. It is the opinion of our review team that in such instances, it is better to employ those evidence-based interventions that would be appropriate for the primary behaviors associated with a child's impairment. For example, aggression believed to be influenced by attachment issues would be treated similar to any other aggression; anxiety believed to be influenced by attachment issues would be treated similar to any other anxiety. This approach appears particularly promising, given the observations from those studying attachment problems that problems with attachment rarely occur in the absence of a comorbid diagnostic condition. Thus, children who have co-occuring depression, for example, should be treated for their depressed mood using the relevant evidence-based interventions.

This is not to say that that attention to attachment issues is never warranted. Indeed, for some children, such issues may affect youth outcomes, even within the context of existing evidence-based approaches. However, given the data available so far, it seems that these cases would be exceedingly rare, and thus the practitioner is encouraged to utilize mainstream evidence based approaches as the first line of intervention.

Plethysmographic Assessment

The penile plethysmograph is a physiological test designed to measure sexual arousal in males by tracking blood flow to the penis. The penile plethysmograph is currently used in the assessment and treatment of adult and juvenile sex offenders in clinical and legal situations (Barker & Howell, 1992; Kaemingk et al., 1995). Serious concerns have been raised regarding the appropriateness of using this instrument for clinical and legal purposes in recent years (Simon & Schouten, 1993). Specifically, these concerns center on issues of standardization, reliability, and predictive validity.

The methods used with the plethysmograph vary widely across settings including the types of stimuli used (audio or visual), content of stimuli, duration of presentation, scoring, and training of the assessor (Barker & Howell, 1992). This is problematic from a measurement standpoint in that data from these assessments can be interpreted very differently depending upon the conditions under which they were administered.

The issue of the participant's ability to alter the outcome of the assessment instrument is also of concern with this instrument, especially given the circumstances under which such an assessment might be conducted. An individual being assessed to determine the likelihood that he will re-offend will be motivated to suppress any socially inappropriate responses. Such attempts to voluntarily control erection, as measured by the plethysmograph, have been shown to be effective in producing negative test results (Simon & Schouten, 1993). In this way, the plethysmograph is susceptible to the effects of social desirability in a manner similar to self-report measures.

A limited amount of research has investigated whether scores from a plethysmographic assessment can discriminate sex offenders from non-offenders or help to identify the gender and age of the target victim. Given the numerous concerns about standardization and measurement, there is no surprise that the outcome data from plethysmographic assessment have generally been poor, with relatively high levels of both false positives and false negatives. For example, Simon and Schouten (1991) cite data suggesting that between 42 and 80% of pedophiles and incest offenders were classified as having normal or nondiscriminating profiles while 33% of non-offenders were assigned rapist profiles. Similarly, there are data suggesting that non-offending males have been found to demonstrate some level of sexual

arousal to stimuli containing young children (Langevin, 1989).

Limited research has been conducted on the use of the plethysmograph with juvenile sex offenders. Issues such as the physical discomfort associated with using the device, and the exposure to sexually explicit stimuli are of increased concern when applied to youth without sufficient evidence to suggest that the data gathered from this type of assessment is valid. In a study of adolescents charged with or convicted of sexual offenses, ages 13 to 17, it was found that being younger was associated with increased erectile response (Kaemingk et al., 1995). Possible explanations for this finding are that youth in their early adolescents may be more responsive to the instrument itself being placed on them or they may be less able to repress their arousal to inappropriate stimuli as compared with older adolescents. This suggests that developmental level complicated interpretation of the data.

The literature review suggests that there are currently too many concerns regarding this type of assessment the data it generates in a youth population. Further, the absence of a body of systematic research demonstrating the appropriateness and safety of using the plethysmograph with children and adolescents suggest that this particular application should be considered experimental at this time. Any use of this instrument should take into account these issues, should incorporate appropriate safeguards for any possible harm, and draw only tentative conclusions based upon its findings.

Conclusions and Future Directions

The primary goal of the present document is to summarize what we know as the most promising psychosocial interventions for children, using the best information available. It is the recommendation of this Committee that the information summarized here continues to be translated into service policy, to ensure the best possible chance for children with mental health and behavioral problems. This information is meant to serve as a reference guide to foster progress and learning regarding what is best for children in Hawaii. During the next biennium, there are plans to develop a sophisticated data reporting system to facilitate the rapid and timely retrieval of the most up-to-date information summarized by this committee.

This review of the literature is part of an ongoing process and reflects only what is currently known in treatment and intervention outcome research, and thus it is incomplete in several regards. For example, a small but important number of children receiving behavioral and/or mental health services may present other problems than those reviewed here.

The Committee agreed that future reviews might devote more attention to early intervention research (interventions for at-risk children) and eventually primary prevention (interventions for all children). For example, a great deal of effective early intervention and prevention programs were not reviewed in this report. Similarly, the task of reviewing interventions for new areas will need to continue, as it will for newly emerging interventions in those areas already examined.

In still other areas, the data are simply incomplete. For example, there is a great deal of concern regarding the optimal strategies for handling co-occurring problems in youth, and yet very few studies present credible comparative tests of strategies for handling such co-occurrence. Individuals are advised to use their best clinical judgment under these circumstances, until a clearer empirical picture emerges. Further, much of the literature reviewed hear does not address the applicability of the findings to populations with mental retardation. Again, generalizability to related populations is best inferred using clinical judgment combined with a review of the above tables that summarize characteristics of the populations studied. It is possible that adaptations would be needed for many of the interventions summarized, depending on the operating conditions in which the intervention would be applied.

Also, the literature speaks only partially to such issues as ethnicity or cultural orientation of families and children, an area of understandable concern to those involved in the behavioral and mental health system in Hawaii. The Committee acknowledges that these shortcomings are inherent in the behavioral and mental health research. Thus, the present report is not meant to be absolutely prescriptive in its recommendations. At the same time, it is not recommended that the interventions reviewed here be summarily rejected because they have not been researched with children in Hawaii. Rather, the interventions reviewed here are seen simply as the best "starting points," with full awareness that some adjustment and adaptation to the needs of local families will be necessary. Overall, it is the opinion of this Committee that these and other issues are best addressed through continued research on treatments for childhood behavioral and mental health problems, and that the progress of our state behavioral and mental health system will be greatly facilitated by our continued and careful attention to emerging research findings. This

important partnership between research and our service delivery system should give the best chance possible to the children and families we serve.

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